Model Urban Natural Resources Conservation Plan

Project Description: In 1996, the Model Urban Natural Resources Conservation Plan (UNRCP) was initiated for the City of Madison and Madison County Mississippi. The plan originated when the Mayor and local officials of the City of Madison, through the Central Mississippi Resource Conservation & Development Council, first highlighted natural resource concerns. A steering committee was formed that categorized the concerns within four general headings: 1) nonpoint source pollution (water quality); 2) water management; 3) landscape (temporal and spatial); and 4) wildlife habitats (terrestrial and aquatic).

The overall purpose of this project was to address the concerns of protecting the natural resources while maintaining a suitable quality of life for a rapidly developing urban area and addressing the changing environment of the local watershed areas. Specifically, the project was designed to develop and implement a holistic, comprehensive systems approach for watershed management activities for demonstration purposes in an urban area. The goal of the program was to provide for continued economic development, while at the same time maintain ecological integrity (health) of the watersheds. Local, state and federal agencies, developers, the Madison County School Board and local churches were participants in UNRCP.

Planning, design and implementation carried out by representatives from the city and local agencies.

While the plan required an understanding of the landscape and land use, resource harvesting and runoff, the common denominator throughout the process was water, therefore the watersheds were chosen as the study areas. Study areas included the drainage of four subwatersheds that encompass parts of the cities of Ridgeland and Madison, as well as Madison County, involving approximately 10,000 acres (15.6 sq. miles). The subwatersheds included Brashear Creek, Culley Creek, Culley Lake and Hearn Creek which provide drainage for 75 percent of the city of Madison.

Fragmented landscaping within the watersheds has greatly impaired the movement of plants, animals and people both within and between ecosystems. Riparian corridors, vital to the structure and functioning of a landscape, play a crucial role in correcting the fragmentation. Wildlife habitats were destroyed or fragmented as large land areas were converted to urban development. Stream channels, altered to accommodate urban needs, continue to be widened through the years with

increasing erosion of the creek beds and slopes. Forests are also severely depleted because of the growth of construction within the past 20 years, resulting in a loss of vegetative cover and soil erosion. Impervious surfaces such as paved roads, parking lots, sidewalks, rooftops, and other impermeable areas of the rural/urban landscape are also of concern.

Installed Best Management Practices

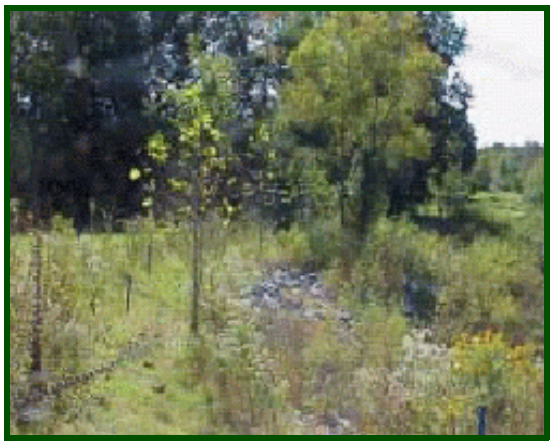
In order to correct some of the identified water quality concerns, specific best management practices (BMPs) were completed with more planned for future projects. BMPs installed include: 1) Vegetative Cover; 2) Grade Stabilization Structure; 3) City Detention Basin and Riparian Buffer; 4) Porous Paving, Cistern, and Rock-lined Channels; and 5) Stormwater Treatment System.

Hillside at Liberty Park before and after planting vegetative cover

Vegetative Cover. A hillside in Liberty Park used for fill material during site construction was not properly replanted and continued to erode over time. Loblolly pines and grasses were planted to stop erosion as well as provide cover for wildlife using 319(h) funds.

Before and after grade stabilization structure installed

Grade Stabilization Structure. A road and bridge that had been washed out during a flash flood were restored and protected with a grade stabilization structure. This added a shoulder to the road and protected access to the bridge.



Native trees and shrubs planted in the buffer zone

City Detention Basin and Riparian Buffer. In a large City-operated detention basin, the riparian buffer had been destroyed during farming operations. The buffer zone was planted with a variety of native trees and shrubs to restore the natural riparian area.

Installation of porous pavement system

Grass growing through the porous pavement system

Porous Paving, Cistern and Rock-lined Channel. An area church installed several BMPs as part of its site plan. The site plan was developed based on topography, natural vegetation and land use. A porous pavement system (see photos above) was installed on the grounds to provide additional parking spaces. This area was planted with grass and can be used as a playground, or for overflow parking. The porous system allows water to penetrate into the soil, while filtering out automobile fluids. A cistern, with a collecting pipe system, was installed to hold runoff from the grounds and parking lots; the runoff is used to irrigate plants on the grounds. Excess water from the cistern drains into a rock lined channel that slows water flow allowing the water to cool and settling of sediment.

Installation of the Vortechnics Stormwater Treatment System

Stormwater Treatment System. At the City Airport, a water and oil separator (Vortechnics System) was installed to filter out pollutants from parking lot runoff. The treatment system prevents sediment, automobile fluids and trash from washing into nearby streams and waterways.

In summary, UNRCP provided for installation of BMPs to protect natural resources in the City of Madison and Madison County, a rapidly growing urban area. Corrective measures included the widening of riparian buffers in direct proportion to the size of the runoff areas and the intensity of activities in uplands such as suburban or urban development. The buffer zone of the City detention basin was planted with native trees and grasses to restore the riparian area. Other steps included the slowing or halting of the degradation of forest systems and initiating measures to correct damage caused by past practices. This includes the establishment of high quality forests and protection of existing forests. Wildlife habitats have been improved by the halt of further stream deterioration and the reestablishment of wildlife corridors providing free movement, improved water quality and food sources.

Lead Agencies: MS Soil and Water Conservation Commission, Madison County Soil and Water Conservation District
Funding: EPA: $257,188 **Matching:**$220,941
Project Dates: 8/21/96 to 12/31/01
Project Location: MS, City of Madison and Madison County, HUCs: 0318000, 103180002, 08060201, 8060202

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For More Information Contact:

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Links:

Model Urban Natural Resources Conservation Plan
http://madisoncountyswcd.org/A_Title_pages.pdf

The Conservation Journal: Special Edition
http://madisoncountyswcd.org/Winter%202001.1.pdf